

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Application No.: 10/500,134
Filing Date: December 1, 2004
Inventor (first named): Stephen L. Davis
Group Art Unit:
Attorney Docket No.: 46096.17

DECLARATION UNDER 37 CFR 1.132

I, THOMAS W. DEVEREUX, declare and say:

1. I am a citizen of Canada and I reside at 8218 Shaske Place, Edmonton, Alberta T6R 3V9 Canada.
2. I have been the Engineering Consultant to CFR Chemicals since 2006.
3. I graduated in 1962 with a Diploma in Chemical Engineering from Battersea College of Technology, London England and have been a Professional Engineer since 1969.
4. I have been working in the chemical industry since 1963.
5. I am familiar with the above-identified patent application and with the reference cited by the Examiner and identified as the Fukumoto Patent, U.S. No. 5,231,063.
6. I have supervised tests conducted on the single sulfuric acid composition disclosed in the Fukumoto Patent and identified as "Sample No. 3" therein (the "Fukumoto Composition").
7. I have supervised tests conducted on five variations to the Fukumoto Composition (the "Alternative Blends"), each variant comprising different volumes of sulfuric acid falling within the 0.1 to 4 percent by volume range claimed in the above-identified patent application.
8. I have supervised tests conducted on compositions claimed in the above-identified patent application comprising volumes of sulfuric acid falling within the 0.1 to 4 percent by volume range claimed (the "Claimed Compositions").
9. In accordance with the Fukumoto Patent, a composition comprising 12g p-aminobenzoic acid ("PABA"), 20.2g 96% sulfuric acid, 12g cupric chloride dihydrate and 200g H₂O was prepared (the Fukumoto Composition). Five variant compositions were prepared, each comprising the above noted equal quantities

of PABA, cupric chloride dehydrate and water. To each variant, an amount of sulfuric acid was added falling within 0.1 to 4 percent by volume (the Alternative Blends).

To prepare the compositions, Sulfuric acid was added to the water followed by PABA. The composition was then mixed. Cupric chloride dihydrate was added next and allowed to dissolve.

Each composition was tested for hydrogen sulfide removal employing a bubble tower procedure as follows; the top portion of the compositions were filtered through a 0.45 um filter and 10 ml of the compositions were mixed with 10 ml of distilled water and run on the bubble tower.

The test results are summarized in the following table.

Sample No.	PABA g	96%H ₂ SO ₄ g	CuCl ₂ ·2H ₂ O g	H ₂ O g	H ₂ SO ₄ vol%	pH	H ₂ S absorbed g/litre
AS-3-22-1	12	20.2	12	200	4.70	0.05	10.8
AS-3-42-1	12	16	12	200	3.76	0.44	9.9
AS-3-24-1	12	10.1	12	200	2.41	0.22	9.9
AS-3-57-2	12	5	12	200	1.21	1.27	8.9
AS-3-24-2	12	2.85	12	200	0.69	1.38	7.9
AS-3-57-1	12	1	12	200	0.24	1.78	4.9

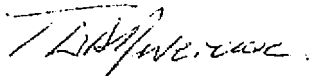
10. In accordance with the above-identified patent application, four compositions were prepared each comprising monoethanolamine ("MEA"), zinc sulfate and water. To three of the compositions, an amount of sulfuric acid was added falling within 0.1 to 4 percent by volume (the Claimed Compositions). One of the compositions had a quantity of sulfuric acid that was 4.75 percent by volume.

Each composition was tested for hydrogen sulfide removal employing the same procedure described above with respect to the Fukumoto Composition and the Alternative Blends.

The test results are summarized in the following table.

Sample No.	MEA g	50%H2SO4 g	ZnSO4 g	H2O g	H2SO4 vol%	pH	H2S absorbed g/litre
1	46.6	10.8	10	32.6	4.75	11.6	21.7
2	46.6	8.0	10	35.4	3.49	11.3	24.6
3	46.6	5.7	10	37.7	2.47	11.22	28.6
4	46.6	2.0	10	41.4	0.90	11.11	26.9

10. The Fukumoto Composition and each of the Alternative Blends were found to be unstable. It was observed that the Fukumoto composition and all of the Alternative Blends prepared separated out of solution as by generation of precipitate. Each of the Claimed Compositions tested remained clear as their chemicals remained in solution.
12. The results demonstrate that as the sulfuric acid component of the Fukumoto Composition was reduced, its ability to absorb hydrogen sulfide diminished.
13. The results demonstrate that the Claimed Compositions were on average 2.5 times more effective at removing hydrogen sulfide than the Fukumoto Composition or the Alternative Blends.
14. In my opinion, the Claimed Compositions are clearly superior for hydrogen sulfide removal over the Fukumoto Composition or any of the Alternative Blends prepared. In my opinion, neither the Fukumoto Composition nor any of the Alternative Blends are nearly as capable of removing hydrogen sulfide.
15. The undersigned declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



Thomas W. Devereux